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IPv6 Urgently, Please!

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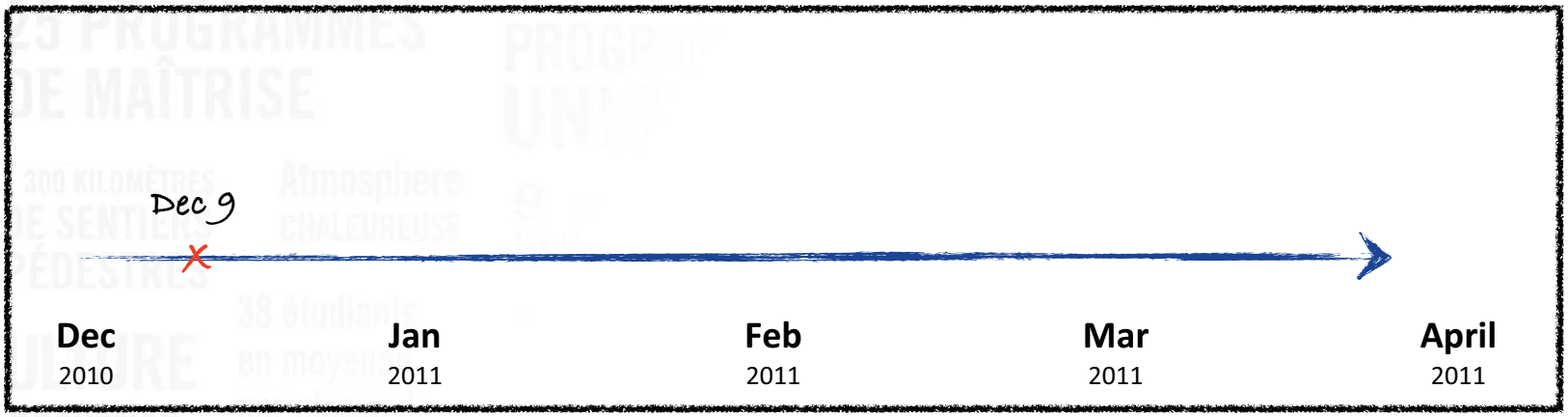
IPv6 External Plan

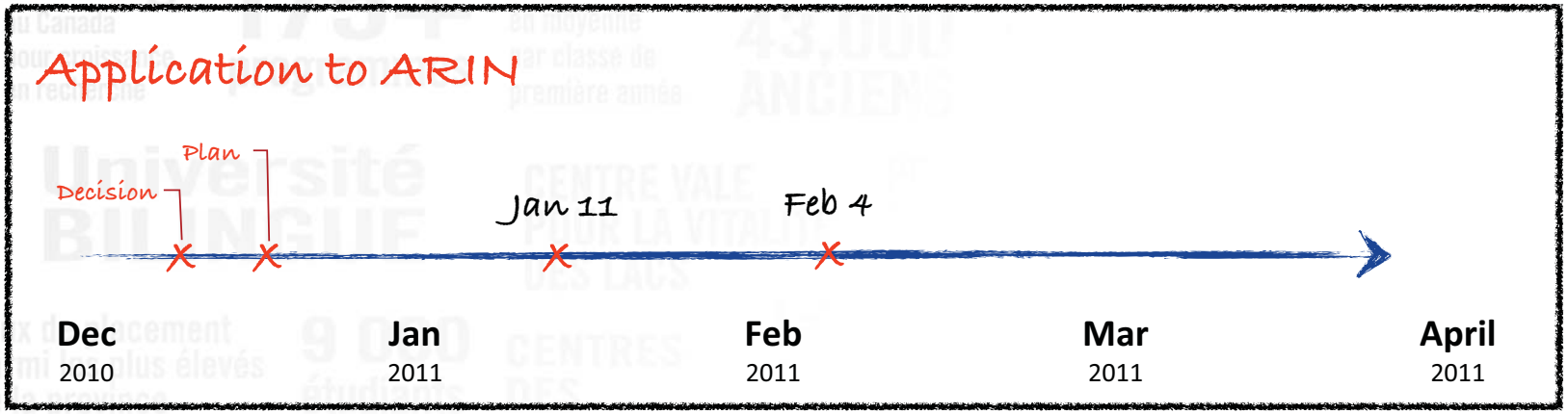
- Goals:
  1. Dual stacked; no tunneling!
  2. Participate on IPv6 Day (6/8/11) with 100% readiness
  3. Be the first Canadian University with 100% IPv6 website



IPv6 External Plan

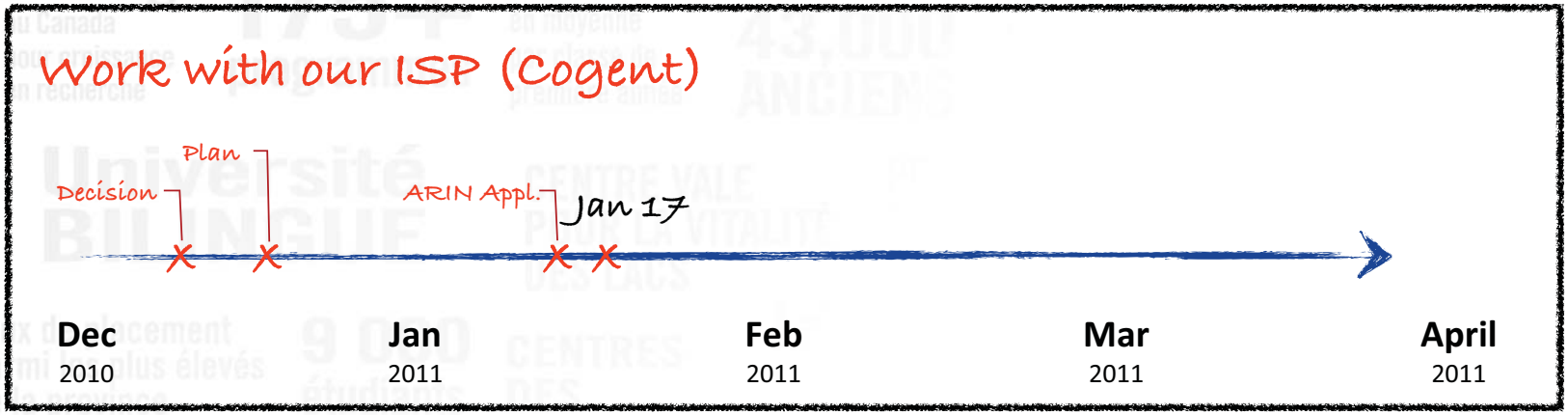
- Assess network and servers from the Internet (last IPv6 demarcation point) to our webservers (in-house)
- Read Silvia's IPv6 Essentials (O'Reilly) book!
- Request our /48 block! from ARIN

IPv6 External Plan



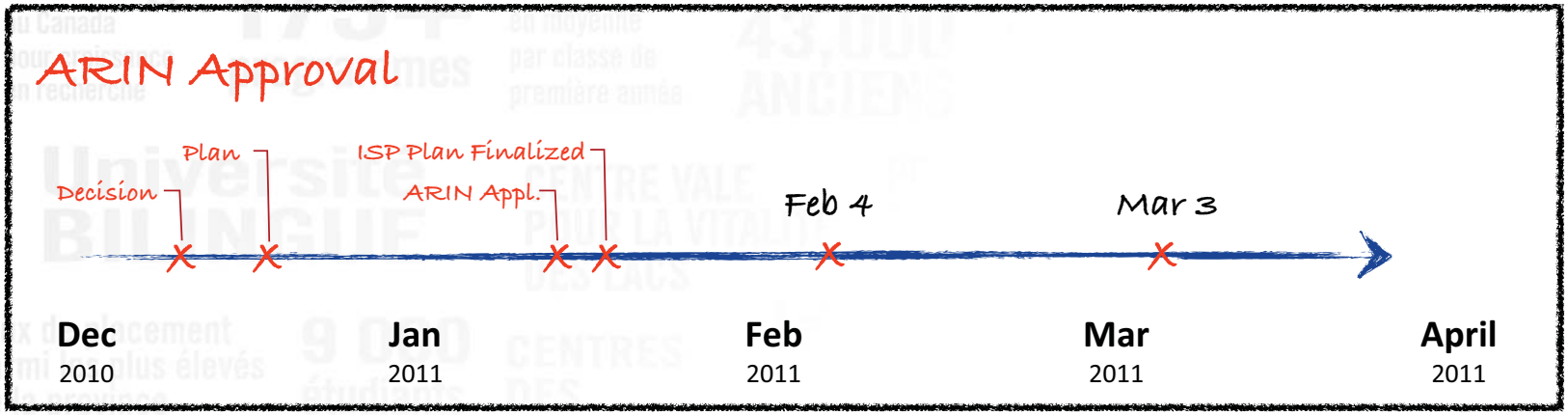
- Application sent on Jan 11
- Assessment completed
  - Network and server configuration started

IPv6 External Plan



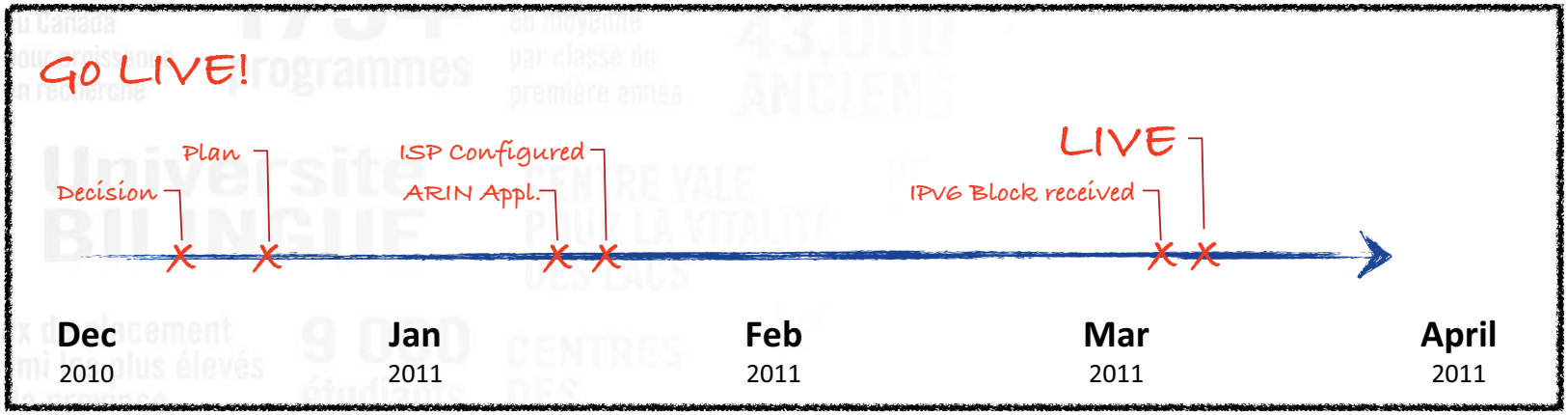
- Could not get a local IPv6 peer router in Sudbury
- Instead, TLS from Sudbury to Toronto (Jan 17)
- TLS was configured

IPv6 External Plan



- Approval Feb 4
- Network and server changes and testing completed (March 1)
  - Note: unadvertised IPv6 block was used on a single subnet
- IPv6 block received March 3: 2620:BD::/48
  - Hint: pay ASAP to get your block ASAP

IPv6 External Plan



- Live on March 4, 2011
  - Entire website!
  - Full BGP routes with Cogent

The Challenges

- Working with network manufacturers.
- Working with ISP was surprisingly accommodating and quick, but lack of expertise with L1 support.
- Server configuration varied but generally simple.
  - Worst was Apple products
  - Windows 2k8 very easy
  - Linux very easy

Network Challenges

- Caution: some network leaders think that IPv6 is a pipe dream
- Routers (Nortel):
  - IPv6 enabled
  - Internal deployment
    - Caution: No OSPFv3 (until later in the summer)
    - Static routes were used
- Firewall (Check Point and Nokia)
  - Changed all Nokia's to Check Point (was already planned but accelerated)
  - Upgraded Check Point FW
  - Caution: had to duplicate many FW rules!

Network Challenges (cont.)

- Load Balancers (Barracuda):
  - Caution: No IPv6 support - "It's coming..."
  - Bypassed directly to server; load balancing on server instead (Apache LB)
- DHCPv6 (ISC)
  - Decided to review an IPAM solution for later
  - Using SLAAC for now (limited), and servers are hard-coded
- DNS (ISC)
  - Not IPv6 native (IPv4 between) but resolves all IPv6 names
- Google Analytics
  - Caution: required custom javascript